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Joint Meeting of Experts on the Regulations annexed
to the European Agreement concerning the
International Carriage of Dangerous Goods
by Inland Waterways (ADN)*
(Fourth session, Geneva, 16-19 January 2001)

MISCELLANEOUS AMENDMENTS TO THE REGULATIONS ANNEXED TO ADN

Proposal by the Central Commission for the Navigation of the Rhine (CCNR)**

ANNEX A

- 6002 (2) Last sentence, delete.
- (5) (a) 2nd dash, end, read:
“, the acronym ADN, ADR or RID;”
- 6471 Note, replace “with 25% or more (mass)” by “with 25 to 30% (mass) or with 90% or more (mass) ...”.

* This meeting is organized jointly by the Economic Commission for Europe and the Central Commission for the Navigation of the Rhine.

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ANNEX B.1

10 315 (3) (a) Delete “degree of filling, calculation of contents, liquid-level gauging, sampling, check list, overfilling, pumping”.

(g) Delete “certificates attesting a gas-free condition;”

(5) First sentence, insert “successful” before “participation”.

Second sentence, insert “at latest” after “shall be taken”.

10 401 (1) Second sentence, replace by:

“For pushed convoys and side-by-side formations this gross mass shall apply to each unit of the convoy or formation.”

Replace the table by:

Class	Item	Maximum permissible gross mass
1		see marginal 11 401
2	any classified under groups T, TF, TC, TO, TFC, TOC, total any classified under group F, total	120 000 kg 300 000 kg
3	1° to 5° and 21° to 26° with letter (a) or (b), total 11° to 19°, 27°, 28°, 32°(c), 33°(c), 41°, total however, maximum of 12° or 13°	300 000 kg 120 000 kg 30 000 kg
4.1	31°(b), 32°(b), 41°(b), 42°(b), total 7° and 16°(b), 21°, 22° and 25°(a), 26°, 33° to 40°, 44°, 45° and 46°, any with letter (b), total	15 000 kg 120 000 kg
4.2	7°, 8°, 18° and 19°, all with letter (b), total	300 000 kg
4.3	15°, 18°, 22° and 23°, all with letter (a) or (b), total	200 000 kg
5.2	1°(b), 2°(b), 11°(b) and 12°(b), total other items, total	15 000 kg 120 000 kg
6.1	any without letter, total any with letter (a), total any with letter (b), total	30 000 kg 120 000 kg 300 000 kg
7		see marginal 71 401
8	any with letter (a) and 6°, 14°, 15° total	300 000 kg
9	any with letter (b), total	300 000 kg

10 401 (2) Add a new paragraph (2) to read:

“(2) The maximum quantity of dangerous goods permitted on board a vessel or on board each unit of a pushed convoy or side-by-side formation is 1,100,000 kg.

No quantitative limitation shall apply to dangerous goods not mentioned in the above table.”

(3) Renumber present paragraph (2) as paragraph (3).

10 403 Paragraph (3), delete.

10 404 (2) End, add:

“- tank-containers;

- tank-vehicles.”

(3) Delete: “For containers other than those referred to in paragraphs (1) and (2) above”.

Delete marginals 10 403 (3), 11 410, 31 410, 43 410, 61 410, 62 410, 71 410 and 91 410 and replace them by the new marginal 10 410 to read:

“10 410 Precautions with respect to foodstuffs, other articles of consumption and animal feeds

Packages, including intermediate bulk containers (IBCs), and uncleaned empty packagings, including uncleaned empty intermediate bulk containers (IBCs), bearing labels conforming to models Nos. 6.1 or 6.2, and those bearing labels of Class 9, containing substances of 1°, 2°(b), 3° or 13°(b) of Class 9, shall not be stacked on or loaded in immediate proximity to packages known to contain foodstuffs, other articles of consumption or animal feeds in vehicles and at places of loading and unloading or trans-shipment.

When these packages, bearing the said labels, are loaded in immediate proximity of packages known to contain foodstuffs, other articles of consumption or animal feeds, they shall be kept apart from the latter:

(a) by complete partitions which should be as high as the packages bearing the said labels, or

(b) by packages not bearing labels conforming to models Nos. 6.1, 6.2 or 9 or packages bearing labels of Class 9 but not containing substances or articles of 1°, 2°, 3° or 13° of that class, or

10 410 (c) by a space of at least 0.8 m,
(cont'd)

unless the packages bearing the said labels are provided with an additional packaging or are completely covered (e.g. by a sheeting, a fibreboard cover or other measures).”

10 500 (1) Amend entries 4.2 and 4.3 of the table to read:

Class	Item Number	Gross mass	Cones/Lights ^{*/}
4.2	any except 7°(b), 8°(b), 18°(b) and 19°(b)	> 30 000 kg	1
	7°(b), 8°(b), 18°(b) and 19°(b)	> 3 000 kg	2
4.3	any except 15°(a) and (b), 18°(a) and (b), 22°(a) and (b) and 23°(a) and (b)	> 30 000 kg	1
	15°(a) and (b), 18°(a) and (b), 22°(a) and (b) and 23°(a) and (b)	> 3 000 kg	2

11 403 (1) Read:

“(1) Packages containing substances and articles of Class 1 for which marginal 10 500 prescribes marking with three blue cones or three blue lights shall be separated by a distance of not less than 12 m from goods of all other classes.”

11 407 Read:

“When goods of Class 1 for which marginal 10 500 prescribes marking with three blue cones or three blue lights are on board, ...” (remainder unchanged).

11 408 (1) Amend to read:

“(1) Loading and unloading operations of goods of Class 1 for which marginal 10 500 prescribes marking with three blue cones or three blue lights shall not start without permission in writing from the competent authority. This provision also applies to loading or unloading of other goods when goods of Class 1 for which marginal 10 500 prescribes marking with three blue cones or three blue lights are on board.”

11 410 Delete the marginal.

11 501 Read:

“Mode of carriage

When the transport of goods of Class 1 is performed by vessels navigating in pushed convoys or side-by-side formations for which marginal 10 500 prescribes

- 11 501 marking with three blue cones or three blue lights, the competent authority
(cont'd) may impose restrictions on the dimensions of such convoys or formations.
- Nevertheless, the use of a motorized vessel giving temporary towing assistance is permitted.”
- 21 301 (1) Insert a new paragraph after the existing text to read:
- “The measurements may only be made by persons wearing protective breathing equipment suited to the goods carried.”
- 21 312 Amend to read:
- “When dangerous goods are carried in containers in open holds ventilation is required only if damage to the containers is suspected or if it is suspected that the contents have spilled inside the container.”
- 31 302 (1) Insert a new paragraph after the existing text to read:
- “The measurements may only be made by persons wearing protective breathing equipment suited to the goods carried.”
- 31 312 Read:
- “When dangerous goods are carried in containers in open holds ventilation is required only if damage to the containers is suspected or if it is suspected that the contents have spilled inside the container.”
- 31 410 Delete this marginal.
- 41 301 (1) Insert a new paragraph after the existing text to read:
- “The measurements may only be made by persons wearing protective breathing equipment suited to the goods carried.”
- 41 403 Replace by:
- “Goods of Class 4.1 for which marginal 10 500 prescribes marking with three blue cones or three blue lights shall be separated by a distance of not less than 12.00 m from goods of all other classes.”

Add new marginals 41 407 and 41 408 to read:

“41 407 Places for loading and unloading

When goods of Class 4.1 for which marginal 10 500 prescribes marking with three blue cones or three blue lights are on board, no goods whatsoever shall be loaded or unloaded, except at the places designated or authorized for that purpose by the competent authority.

41 408 Time and duration of loading and unloading operations

(1) Loading and unloading operations for goods of Class 4.1 for which marginal 10 500 prescribes marking with three blue cones or three blue lights shall not start without permission in writing from the competent authority. This provision also applies to loading or unloading of other goods, when goods of Class 4.1 for which marginal 10 500 prescribes marking with three blue cones or three blue lights are on board.

(2) Loading and unloading operations shall be suspended in the event of a thunderstorm.”

41 501 Replace the heading by “Mode of carriage” and present the last sentence as a separate paragraph.

42 260 (4) Read:

“(4) When the vessel carries goods of Class 4.2, 8°(b) and 19°(b) for which marginal 10 500 prescribes marking with three blue cones or three blue lights, the toximeter referred to in marginal 10 260 (1) (d) is required on board together with instructions for use.”

42 301 (1) Insert a new paragraph after the existing text to read:

43 301 (1)

“The measurements may only be made by persons wearing protective breathing equipment suited to the goods carried.”

43 410 Delete this marginal.

52 301 (1) Insert a new paragraph after the existing text to read:

“The measurements may only be made by persons wearing protective breathing equipment suited to the goods carried.”

52 312 Add a new marginal:

“52 312 Ventilation

When dangerous goods are carried in containers in open holds, the holds in question shall be ventilated if damage to the containers is suspected or if it is suspected that the contents have spilled inside the container.”

52 403 Read:

“Goods of Class 5.2 for which marginal 10 500 prescribes marking with three blue cones or three blue lights shall be separated by a distance of not less than 12.00 m from goods of all other classes.”

52 407 Read:

“When goods of Class 5.2 for which marginal 10 500 prescribes marking with three blue cones or three blue lights are on board, ...” (remainder unchanged).

52 408 (1) Amend to read:

“(1) Loading or unloading operations for goods of Class 5.2 for which marginal 10 500 prescribes marking with three blue cones or three blue lights shall not be started without permission in writing from the competent authority. This provision applies also to loading or unloading of other goods, when substances of Class 1 for which marginal 10 500 prescribes marking with three blue cones or three blue lights, are on board.”

52 501 Replace the heading by “Mode of carriage” and present the last sentence as a separate paragraph.

61 301 (1) Insert a new paragraph after the existing text to read:

“The measurements may only be made by persons wearing protective breathing equipment suited to the goods carried.”

(3) Delete present paragraph (3).

61 312 (1) Read:

“(1) When dangerous goods are carried in containers in open holds, the holds in question shall be ventilated if damage to the containers is suspected or if it is suspected that the contents have spilled inside the container.”

61 410

62 410

71 410 **A**

Delete these three marginals.

81 301 (1) Insert a new paragraph after the existing text to read:

91 301 (1)

“The measurements may only be made by persons wearing protective breathing equipment suited to the goods carried.”

91 410 Delete this paragraph.

120 231 (2) Amend to read:

“(2) The air vents in the engine rooms and the air intakes of the engines which do not take in air directly from the engine room shall be located not less than 2 m from the protected area.”

ANNEX B.2

210 014 Insert the following definitions under “Miscellaneous”:

Flame arrester:

means a device mounted in the vent of part of an installation or in the interconnecting piping of a system of installations, the purpose of which is to permit flow but prevent the propagation of a flame front. This device shall be tested according to the European standard EN 12874 (1998);

Flame arrester plate stack:

means the part of the flame arrester the main purpose of which is to prevent the passage of a flame front;

Flame arrester housing:

means the part of a flame arrester the main purpose of which is to form a suitable casing for the flame arrester plate stack and ensure a mechanical connection with other systems;

Steady burning:

means combustion stabilized for an indeterminate period;

Deflagration:

means an explosion which propagates at subsonic speed (see EN 1127-1:1997);

Detonation:

means an explosion which propagates at supersonic speed and is characterized by a shock-wave (see EN 1127-1:1997);

High-velocity vent valve (eductor):

means a pressure-reducing valve with a nominal ejection speed greater than the speed of propagation of a flame, thus preventing the passage of a flame front. This type of installation shall be tested in accordance with European standard EN 12 874 (1998);

Types of vessel:

Type N: means a tank vessel intended for the carriage of liquids.

210 014 Type N closed: means a tank vessel intended for the carriage of liquids in
(cont'd) closed cargo tanks.

Type N open with flame arrester:

means a tank vessel intended for the carriage of liquids in open cargo tanks, where the outward-opening vents are fitted with flame arresters capable of withstanding steady burning.

Type N open: means a tank vessel intended for the carriage of liquids in open cargo tanks.

210 307 (2) Amend to read:

“Gas-freeing ... through flame arresters capable of withstanding steady burning.

In normal conditions of operation the gas concentration in the vented mixture at the outlet shall be less than 50% of the lower explosive limit.

The suitable venting equipment ... extraction side. The gas concentration ...”
(remainder unchanged).

210 315 (3) (a) Delete: “labelling of packages”;

(c) Delete: “radioactivity”;

(5) First sentence, insert “successful” before “participation”. Second sentence, insert “at latest ...” after “shall be taken”.

210 317 (3) (d) Delete: “certificates attesting a gas-free condition”;

(5) First dash, insert “at latest” after “shall be taken”.

Replace the last sentence by the following paragraph:

“When the refresher or advanced training course is taken in the year preceding the date of expiry of the certificate, the new period of validity shall begin on the expiry date of the preceding certificate, but in other cases it shall begin on the date of certification of participation in the course.”

(6) Add “carrying LPG/LNG” after “Tankers”.

210 318 (3) (h) Replace: “contamination” by “pollution”.

(5) First dash, insert “at latest” after “shall be taken”.

Replace the last sentence by the following paragraph:

“When the refresher or advanced training course is taken in the year preceding the date of expiry of the certificate, the new period of validity shall begin on the expiry date of the preceding certificate, but in other cases it shall begin on the date of certification of participation in the course.”

(6) Add “carrying chemicals in bulk” after “Tankers”.

210 402 (4) End, add:

“During unloading it may also issue the derogations of paragraph (3).”

210 410 (1) Read:

“(1) Loading ... completed, and questions 1 to 18 of the checklist have been checked off with an ‘x’. Irrelevant questions should be deleted. The list ... shore facilities. If a positive response to all the questions is not possible, loading or unloading is only permitted with the consent of the competent authority.”

210 416 (7) Insert new paragraph (7) to read:

“(7) When a tank vessel conforms to marginal 321 222 (5) (d) or 331 222 (5) (d), the individual cargo tanks shall be closed off during transport and opened during loading and gas-freeing.

(8) Renumber existing paragraph (7) as paragraph (8) and replace the last sentence by:

“Persons connecting or disconnecting the loading and unloading pipes or the vapour pipes or gas discharge pipes, or taking samples, carrying out measurements, replacing the flame arrester plate stack or relieving pressure in cargo tanks shall wear the equipment referred to in marginal 210 260 (1) (a) if this equipment is prescribed in Part II.”

(9) to (13) Add the following new paragraphs:

“(9) During loading or unloading in a closed tank vessel of substances for which an open type N vessel with a flame arrester is sufficient according to the list of substances (Appendix 4), the cargo tanks may be opened using the safe pressure-relief device referred to in marginal 321 222 (4) (a) or marginal 331 222 (4) (a).

210 416 (10) Paragraph (9) shall not apply when the cargo tanks contain gases or vapour from substances for the carriage of which a closed-type tank vessel is required in the list of substances.”
(9) to (13)
(cont'd)

(11) The nozzle closure referred to in marginal 311 211 (1) (g), 321 211 (1) (g) or 331 211 (1) (g) can be opened only after a gastight connection has been made to the closed or partly closed sampling device.

(12) For substances requiring protection against explosions according to the list of substances (appendix 4) the connection of the vapour pipe or the gas discharge piping to the shore installation shall be such that the vessel is protected against detonations and the passage of flames from the shore.

(13) The bulwark ports, openings in the foot rail, etc., shall not be capable of being closed off.”

210 419 Add a new marginal to read:

“210 419 Inerting of tank vessels

The cargo tanks of a closed tank vessel, loaded or empty, which have not been cleaned of substances for which the use of a closed tank vessel of type C or type N with anti-explosion protection is prescribed in the list of substances (Appendix 4) shall be inerted in accordance with marginal 210 418. The inerting shall be performed so as to ensure that the oxygen content is less than 8% in volume.

Inerting is not prescribed when the tank vessel is in conformity with marginal 321 222 (5) or marginal 331 222 (5).”

210 422 (1) and (2) Replace existing paragraphs (1) and (2) by:

“(1) Opening of cargo tank apertures shall be permitted only after the tanks have been relieved of pressure.

(2) Opening of sampling outlets and ullage openings and opening of the housing of the flame arrester shall not be permitted except for the purpose of inspecting or cleaning empty cargo tanks.

When in the list of substances (Appendix 4) anti-explosion protection is required, the opening of cargo tank covers or of the housing of the flame arrester for the purpose of mounting or removing the flame arrester plate stack in unloaded cargo tanks shall be permitted only if the cargo tanks in question have been gas-freed and the concentration of flammable gases in the tanks is less than 10% of the lower explosive limit.

- 210 422 (3) Sampling shall be permitted only if a device prescribed in the list of substances (Appendix 4) or a device ensuring a higher level of safety is used.
(1) and (2)
(cont'd)
- Opening of sampling outlets and ullage openings of cargo tanks loaded with substances for which marking with two blue cones or blue lights is prescribed in the list of substances (Appendix 4) shall be permitted only when loading has been interrupted for not less than 10 minutes.
- (3) to (6) Renumber as (4) to (7), replacing “(1) to (5)” in the last paragraph by “(1) to (6)”.
- 221 301 Heading, read:
- “Access to cargo tanks, cargo residue tanks, cargo pump-rooms below deck, cofferdams, double-hull spaces, double bottoms and hold spaces; inspections.”
- 221 301 (1) Paragraph (1), insert a new paragraph before the last sentence, to read:
- “The measurements may only be made by persons wearing protective breathing equipment suited to the goods carried.”
- 221 418 Add a new marginal:
- “221 418 Inerting of gaseous phases in tanks
- When anti-explosion protection is required in accordance with the list of substances of Appendix 4, any air present in the cargo tanks and in their piping shall be purged in an appropriate manner using an inert gas and they shall be kept air-free.”
- 231 301 (1) In paragraph (1) insert a new paragraph before the last sentence, to read:
- “The measurements may only be made by persons wearing protective breathing equipment suited to the goods carried.”
- 241 301 (1) In paragraph (1) insert a new paragraph before the last sentence, to read:
- “The measurements may only be made by persons wearing protective breathing equipment suited to the goods carried.”
- 261 301 (1) In paragraph (1) insert a new paragraph before the last sentence, to read:
- “The measurements may only be made by persons wearing protective breathing equipment suited to the goods carried.”

- 281 301 (1) In paragraph (1) insert a new paragraph before the last sentence, to read:
- “The measurements may only be made by persons wearing protective breathing equipment suited to the goods carried.”
- 291 301 (1) In paragraph (1) insert a new paragraph before the last sentence, to read:
- “The measurements may only be made by persons wearing protective breathing equipment suited to the goods carried.”
- 311 210 (2) Amend to read:
- “(2) The lower edges of door-openings in the sidewalls of superstructures and the coaming of access hatches to under-deck spaces shall have a height of not less than 0.50 m above the deck.
- This requirement need not be complied with if the wall of the superstructures facing the cargo area extends from one side of the ship to the other and has doors the sills of which have a height of not less than 0.50 m. The height of this wall shall be not less than 2.00 m. In this case, the lower edges of door-openings in the sidewalls of superstructures and the coamings of access hatches behind this wall shall have a height of not less than 0.10 m. The sills of engine room doors and access hatches shall, however, always have a height of not less than 0.50 m above the deck.”
- (3) Add “, foot-rails, etc.” after “The bulwarks”.
- 311 211 (2) Insert a new paragraph (d) to read:
- “(d) Side-stringers linking or supporting the load-bearing components of the sides of the vessel with the load-bearing components of the longitudinal walls of cargo tanks and side-stringers linking the load-bearing components of the vessel’s bottom with the tank-bottom are prohibited.”
- 311 221 (1) (g) Replace by:
- “(g) a nozzle with a closure connected to a sampling device of the closed type;”
- (7) First sentence:
- Amend to read:
- “... a visual and an audible alarm in the wheelhouse. When the wheelhouse is unoccupied the alarm shall also be perceptible in a location occupied by a crew member.”

311 232 (2) (2) Read:

“(2) Open ends of air pipes of all oil fuel tanks shall lead to 0.50 m above the deck. Their open ends ...” (remainder unchanged).

321 200 (1) (c) Add:

“Vapour pipes and gas discharge pipes shall be protected against erosion.”

321 210 (2) Read:

“(2) The lower edges of door-openings in the sidewalls of superstructures and the coamings of access hatches to under-deck spaces shall have a height of not less than 0.50 m above the deck.”

This requirement need not be complied with if the wall of the superstructures facing the cargo area extends from one side of the ship to the other and has doors the sills of which have a height of not less than 0.50 m. The height of this wall shall be not less than 2.00 m. In this case the lower edges of the doors in the sidewalls of superstructures and of coamings of access hatches behind this wall shall have a height of not less than 0.10 m. The sills of engine-room doors and access hatches shall, however, always have a height of not less than 0.50 m above the deck.”

(3) Add: “, foot-rails, etc.” after “The bulwarks”.

321 211 (2) Add a new paragraph (d):

“(d) Side-stringers linking or supporting the load-bearing components of the sides of the vessel with the load-bearing components of the longitudinal walls of cargo tanks and side stringers linking the load-bearing components of the vessel’s bottom with the tank-bottom are prohibited.”

321 212 (6) Replace “321 226 (2)” by “321 226 (3)”.

321 220 (2) Insert before the last sentence:

“These requirements are not applicable when the bulkhead between the engine-room and the cofferdam comprises fire-protection insulation ‘A-60’ in accordance with SOLAS II-2, Regulation 3 or has been fitted out as a service space.”

(4) Add a new paragraph (4) to read:

“(4) The ventilation openings of cofferdams shall be fitted with a flame-arrester capable of withstanding a deflagration.”

321 221 (1) (g) Read:

“(g) a nozzle with a closure connected to a sampling device, closed or partially closed, and/or a sampling opening, as required in the list of substances (Appendix 4).”

(7) First sentence:

Amend to read:

“... a visual and an audible alarm in the wheelhouse. When the wheelhouse is unoccupied the alarm shall also be perceptible in a location occupied by a crew member.”

Last paragraph:

“... shall activate a visible and audible alarm in the wheelhouse when the overpressure exceeds 40 kPa during the voyage. When the wheelhouse is unoccupied, the alarm shall also be perceptible in a location occupied by a crew member. The manometers shall be capable of being read in the immediate vicinity of the water-spray system control.”

321 221 (11) Read:

“(11) The sampling openings shall have a diameter of not more than 0.30 m. They shall be fitted with a flame arrester plate stack, capable of withstanding steady burning and shall be so designed that the opening period will be as short as possible and that the flame arrester plate stack cannot remain open without external intervention. The manometers shall be capable of being read in the immediate vicinity of the water-spray system control.”

(12) Delete this paragraph.

321 222 (4) (a) Read:

“(a) Each cargo tank ...

- safety devices ... vacuums. When the list of substances (Appendix 4) requires anti-explosion protection, the vacuum valve shall be fitted with a flame arrester capable of withstanding a deflagration and the pressure-relief valve with an eductor capable of withstanding steady burning.

321 222 (4)
(cont'd)

The gases shall be discharged upwards. The opening pressure of the eductor ... valve;

- a connection ...;
- a device for the safe depressurization of the tanks consisting of at least a fire-resistant flame-arrester and a stop valve which clearly indicates whether it is open or shut.”

(5) Read:

“(a) Insofar as the list of substances (Appendix 4) prescribes anti-explosion protection, a vapour pipe connecting two or more cargo tanks shall be fitted, at the connection to each cargo tank, with a flame arrester with a fixed or spring-loaded plate stack, capable of withstanding a detonation.

This equipment may consist of:

- (i) a flame arrester fitted with a fixed plate stack, where each cargo tank is fitted with a pressure-relief valve capable of withstanding a deflagration and an eductor capable of withstanding steady burning;
- (ii) a flame arrester fitted with a spring-loaded plate stack, where each cargo tank is fitted with a pressure-relief valve capable of withstanding a deflagration;
- (iii) a flame arrester with a fixed plate stack;
- (iv) a flame arrester with a fixed plate stack, where the pressure-measuring device is fitted with an alarm system in accordance with marginal 321 221 (7).
- (v) a flame arrester with a spring-loaded plate stack, where the pressure-measuring device is fitted with an alarm system in accordance with marginal 321 221 (7).

When a fire-fighting installation is permanently mounted on deck in the cargo area and can be brought into service from the deck and from the wheelhouse, flame arresters need not be required for individual tanks.

Only substances which do not mix and which do not react dangerously with each other may be carried simultaneously in cargo tanks connected to a common vapour pipe.

or

- 321 222 (4) (b) (cont'd) Insofar as the list of substances (Appendix 4) prescribes anti-explosion protection, a vapour pipe connecting two or more cargo tanks shall be fitted, at the connection to each cargo tank, with a pressure/vacuum relief valve incorporating a flame arrester capable of withstanding a detonation/deflagration.

Only substances which do not mix and which do not react dangerously with each other may be carried simultaneously in cargo tanks connected to a common vapour pipe.

or

- (c) Insofar as the list of substances (Appendix 4) prescribes anti-explosion protection, an independent vapour pipe for each cargo tank, fitted with a pressure/vacuum relief valve incorporating a flame arrester capable of withstanding a deflagration and an eductor incorporating a flame arrester capable of withstanding steady burning. Several different substances may be carried simultaneously.

or

- (d) Insofar as the list of substances (Appendix 4) prescribes anti-explosion protection, a vapour pipe connecting two or more cargo tanks shall be fitted, at the connection to each cargo tank, with a shut-off device capable of withstanding a detonation, where each cargo tank is fitted with a vacuum relief valve capable of withstanding a deflagration and an eductor capable of withstanding steady burning.

Only substances which do not mix and which do not react dangerously with each other may be carried simultaneously in cargo tanks connected to a common vapour pipe.”

- 321 242 (4) Add, after the existing text, a paragraph to read:

“The requirements of marginal 321 252 (3) (b) are not applicable to the unloading of substances having a flash point of 61 ° C or more when the temperature of the product is at least 15 K lower at the flash point.”

- 331 200 (1) Add a new paragraph (c):

“(c) Vapour pipes and gas discharge pipes shall be protected against erosion.”

- 331 210 (2) Read:

“(2) The lower edges of door-opening in the sidewalls of superstructures and the coaming of access hatches to under-deck spaces shall have a height of not less than 0.50 m above the deck.

331 210 (2) This requirement need not be complied with if the wall of the superstructures facing the cargo area extends from one side of the ship to the other and has doors the sills of which have a height of not less than 0.50 m above the deck. The height of this wall shall be not less than 2.00 m. In this case, the lower edges of door-openings in the sidewalls of superstructures and the coamings of access hatches behind this wall shall have a height of not less than 0.10 m above the deck. The sills of engine room doors and access hatches shall, however, always have a height of not less than 0.50 m.”

“(3) The bulwarks, foot-rails, etc. shall ...” (remainder unchanged).

331 211 (7) Read:

“(7) Where a vessel is constructed with hold spaces containing cargo tanks which are independent of the structure of the vessel, the space between the wall of the hold space and the wall of the cargo tanks shall be not less than 0.60 m. The space between the bottom of the hold space and the bottom of the cargo tanks shall be not less than 0.50 m.

The space may be reduced to 0.40 m under the sump pumps.

If the above-mentioned spaces are not feasible, it shall be possible to remove the cargo tanks easily.”

(9) Replace with paragraphs (9) to (11) as follows:

“(9) Where services spaces are located in the cargo area under deck, they shall be arranged so as to be easily accessible to permit persons even when wearing protective clothing and breathing apparatus to operate easily the equipment contained therein. They shall also be designed so as to allow an injured or unconscious person to be removed without difficulties, if necessary by means of fixed installed equipment.

(10) Cofferdams, wing tanks, double bottoms, cargo tanks, hold spaces and other accessible spaces in the cargo area, shall be arranged so that they may be completely inspected and cleaned. The dimensions of openings, except for those of wing tanks and double bottoms not having a wall common to the cargo tanks, shall be sufficient to allow a person wearing breathing apparatus to enter or leave the space without difficulties. They shall be designed so as to allow an injured or unconscious person to be removed without difficulties, if necessary by means of fixed installed equipment. In these spaces, there shall be not less than 0.50 m between the strengthening members. In the double bottom this space may be reduced to 0.45 m.

331 211 (10) Cargo tanks may, however, have circular openings with a diameter of not less than 0.68 m.
(cont'd)

(11) Paragraph (6) (c) does not apply to type N open.”

331 212 Replace: “331 226 (2)” by “331 226 (3)”.

331 220 (1) Last sentence, read: “... ventilation inlets shall be located not less than 0.50 m above the deck.”

(1) Insert before the last sentence (which becomes a paragraph):

“These requirements are not applicable when the bulkhead between the engine room and the cofferdam has an ‘A-60’ fire protection insulation according to SOLAS II-2, Regulation 3.”

(4) End, add: “capable of withstanding a deflagration”.

331 221 (1) (g) Replace by:

“(g) a nozzle with a closure connected to a sampling device, closed or partly closed, and/or a sampling opening, as required in the list of substances (Appendix 4);”

(5) (c) Add the following:

“(c) Supply vessels and other vessels which may be delivering products required for operation shall be equipped with a connecting nozzle conforming to European standard EN 12 827 and a rapid closing device enabling refuelling to be interrupted. A control facility shall actuate this device by a binary signal from the section of the facility for the prevention of overflowing located on the supply vessel. It shall be possible to actuate the rapid closing device independently of the binary signal.

The control facility shall convert the binary signal into a signal actuating the rapid closing device.

The electrical circuits actuating the rapid closing device shall be secured according to the quiescent current principle or other appropriate error detection measures. The state of operation of electrical circuits which cannot be controlled using the quiescent current principle shall be capable of being easily checked.

It shall be possible to transmit the binary signal to the control facility using a fail-safe electrical circuit fitted with a white coupler socket conforming to publication IEC 309, for 40 to 50 V DC, with the keying lug position at 10 o'clock.

331 221 (5) The rapid closing device shall actuate a visual and an audible alarm on
(cont'd) board.”

(7) First sentence, read: “... a visible and audible alarm in the wheelhouse.
When the wheelhouse is unoccupied, the alarm shall also be perceptible in a
location occupied by a crew member.”

(11) Replace by:

“(11) The sampling openings shall have a diameter of not more than 0.30 m.
They shall be fitted with a flame arrester plate stack capable of withstanding
continuous burning and shall be so designed that the period during which they
remain open is as short as possible and that the flame arrester plate stack cannot
remain open without external intervention.

Flame arrester plate stacks are not required on board type N open tank vessels.”

331 222 (4) (a) Read:

“(a) Each cargo tank

for the open N type with flame arrester:

- safety equipment fitted with flame arresters capable of withstanding
continuous burning and designed to prevent ...;

for the closed N type:

- devices for preventing unacceptable overpressure or vacuum. Where
anti-explosion protection is required in the list of substances
(Appendix 4), the vacuum valve shall be fitted with a flame arrester
capable of withstanding a deflagration and the pressure relief valve with
an eductor acting as a flame arrester capable of withstanding continuous
burning.

Gases shall be discharged upwards. The opening pressure of the
eductor and the opening pressure of the vacuum valve shall be
permanently marked on the valves;

- a connection for the safe return ashore of gases escaping during
loading;
- a device for the safe depressurization of the cargo tanks, consisting of at
least a flame arrester capable of withstanding continuous burning and a
stop valve the position of which shall clearly indicate whether it is open
or shut.”

331 222 (5) Read:

“(a) Insofar as anti-explosion protection is prescribed in the list of substances (Appendix 4), a vapour pipe connecting two or more cargo tanks shall be fitted, at the connection to each cargo tank, with a flame arrester with a close-spaced or spring-loaded plate stack, capable of withstanding detonation. Only substances which do not mix and which do not react dangerously with each other may be carried simultaneously in cargo tanks connected to a common vapour pipe.

This equipment may consist of:

- (i) a flame arrester fitted with a fixed plate stack, where each cargo tank is fitted with a vacuum valve capable of withstanding a deflagration and an eductor capable of withstanding continuous burning;
- (ii) a flame arrester fitted with a spring-loaded plate stack, where each cargo tank is fitted with a vacuum valve capable of withstanding a deflagration;
- (iii) a flame arrester with a fixed plate stack;
- (iv) a flame arrester with a fixed plate stack, where the pressure measurement device is fitted with an alarm system conforming to marginal 331 221(7);
- (v) a flame arrester with a spring-loaded plate stack, where the pressure measurement device is fitted with an alarm system conforming to marginal 331 221(7).

Only substances which do not mix and which do not react dangerously with each other may be carried simultaneously in cargo tanks connected to a common vapour pipe.

or

(b) Insofar as anti-explosion protection is prescribed in the list of substances (Appendix 4), a vapour pipe connecting two or more cargo tanks shall be fitted, at the connection to each cargo tank, with a pressure/vacuum relief valve incorporating a flame arrester capable of withstanding a detonation/deflagration.

Only substances which do not mix and which do not react dangerously with each other may be carried simultaneously in cargo tanks connected to a common vapour pipe.

or

331 222 (5) (c) Insofar as anti-explosion protection is prescribed in the list of substances (Appendix 4), an independent vapour pipe for each cargo tank, fitted with a pressure/vacuum relief valve incorporating a flame arrester capable of withstanding a deflagration and an eductor incorporating a flame arrester capable of withstanding continuous burning. Several different substances may be carried simultaneously.

or

(d) Insofar as anti-explosion protection is prescribed in the list of substances (Appendix 4), a vapour pipe connecting two or more cargo tanks shall be fitted, at the connection to each cargo tank, with a shut-off device capable of withstanding a detonation, where each cargo tank is fitted with a vacuum valve capable of withstanding a deflagration and an eductor capable of withstanding continuous burning.

Only substances which do not mix and which do not react dangerously with each other may be carried simultaneously in cargo tanks connected to a common vapour pipe.”

331 225 (11) First paragraph, replace by:

“Paragraphs (1) (a) and (c), (2) (e) and (3) do not apply to type N open unless the substance carried has corrosive properties (hazard 8). Paragraph (4) (b) does not apply to type N open.”

331 242 (4) Add a second paragraph to read:

“The requirements of marginal 331 252 (3) (b) are not applicable in the case of the unloading of substances having a flash point of 61° C or more when the temperature of the product is at least 15 K lower at the flashpoint.”

APPENDICES TO ANNEX B.2

Appendix 2

In the checklist to Appendix 2 add entry 12.3 to read:

	Vessel	Loading/unloading place
12.3 When anti-explosion protection is prescribed in the list of substances (Appendix 4) does the shore installation ensure that the gas return line and the gas exchange line are such as to protect the vessel against detonations and the passage of flame from the shore?	-	0

Appendix 4

1. The remarks concerning column 20 are amended as follows:

1.1 Replace remarks 5, 6 and 7 by the following text:

“5. This substance is liable to clog the vapour pipe and its fittings. Careful surveillance should be ensured. If a close-type tank vessel is required for the carriage of this substance the vapour pipe shall conform to marginal 321 222 (5) (a) (i), (ii), (iv),(v), (b), (c) or (d) or to marginal 331 222 (5) (a) (i), (ii), (iv), (v), (b), (c) or (d). This requirement does not apply when the cargo tanks are inerted in accordance with marginal 210 418 nor when anti-explosion protection is not required in column 16 and when flame arresters have not been installed.

6. When external temperatures are below or equal to that indicated in column 20, the substance may only be carried in tank vessels meeting the following conditions:

The tank vessels shall be equipped with a cargo heating system conforming to marginal 321 242 or 331 242. The arrangement of heating coils inside the cargo tanks instead of a cargo heating system may be sufficient (possibility of heating the cargo).

In addition, in the event of carriage in a closed-type vessel, if the tank vessel

- is fitted out in accordance with marginal 321 222 (5) (a) (i) or 331 222 (5) (a) (i), it shall be equipped with pressure/vacuum valves capable of being heated,

or

- is fitted out in accordance with marginal 321 222 (5) (a) (ii), (v), (b), (c) or (d) or 331 222 (5) (a) (ii), (v), (b), (c) or (d), it shall be equipped with heatable vapour pipes and heatable pressure/vacuum valves;
- is fitted out in accordance with marginal 321 222 (5) (a) (iii) or (iv) or 331 222 (5) (a) (iii) or (iv), it shall be equipped with heatable vapour pipes and with heatable pressure/vacuum valves and heatable flame arresters.

The temperature of the vapour pipes, pressure/vacuum valves and flame arresters shall be kept at least above the melting point of the substance.

7. If a closed-type tank vessel is required to carry this substance or if the substance is carried in a closed-type vessel, if this vessel
- is fitted out in accordance with marginal 321 222 (5) (a) (i) or 331 222 (5) (a) (i), it shall be equipped with heatable pressure/vacuum valves,
- or
- is fitted out in accordance with marginal 321 222 (5) (a) (ii), (v), (b), (c) or (d) or 331 222 (5) (a) (ii), (v), (b), (c) or (d), it shall be equipped with heatable vapour pipes and heatable pressure/vacuum valves,
- or
- is fitted out in accordance with marginal 321 222 (5) (a) (iii) or (iv) or 331 222 (5) (a) (iii) or (iv), it shall be equipped with heatable vapour pipes and with heatable pressure/vacuum valves and heatable flame arresters.

The temperature of the vapour pipes, pressure/vacuum valves and flame arresters shall be kept at least above the melting point of the substance.”

1.2 Insert a paragraph 13 to read:

- “13. If no stabilizer is supplied or if the supply is inadequate, the oxygen content in the gaseous phase shall not exceed 0.1%. Overpressure must be constantly maintained in cargo tanks. This requirement applies also to voyages on ballast or empty with uncleaned cargo tanks between cargo transport operations.”

2. In the list of substances, column 20, amend to read:

2.1 Delete "5" in the following entries:

1114	1120	1123	1145
1165	1264	1307	1578
1604	1662	1663	1664
1708	1750	1764	1779
1780	1783	1987	2021
2022	2048	2054	2076
2078	2205	2206	2215
2238	2239	2259	2280
2289	2312	2321	2382
2430	2477	2491	2564
2651	2789	2811	

2.2 Delete "6: ... °C" in the following entries:

1662	1764	2205	2218
2259	2289	2491	

2.3 Delete "7" in the following entries:

1999	2448	2531
------	------	------

2.4 Correct "3" to read "23" in entry 1267 (3rd from the end)

2.5 Delete "17" in entry 2259.

2.6 Insert "5" in the following entries:

1092	1093	1143	1218
1247	1301	1917	1919
1991	2055	2348	2527
3079	and substances where $61^{\circ}\text{C} < \text{f.p.} \leq 100^{\circ}\text{C}$ n.o.s. (2 ethylhexyl acrylate, stabilized)"		

2.7 Insert "26" in the first entry 1578.

2.8 Insert "6: +7° C; 17" in the first entry 2920.

3. Correction of entries:

3.1 Entry 1986, 3rd and 5th places in column 2, replace "f.p. <23° C" by "f.p. $\geq 23^{\circ}\text{C}$ ".

3.2 Country 1986, last position: this should be replaced by the following two new lines:

1986	ALCOHOLS, FLAMMABLE, TOXIC, N.O.S. (...) p.p. < 23° C boiling point > 115° C	3, 17° (b)	3 + 6.1	C	2	2		35	95		2	no	T4 ³⁾	II B ⁴⁾	+	+	+	2
1986	ALCOHOLS, FLAMMABLE, TOXIC, N.O.S. (...) p.p. ≥ 23° C boiling point > 115° C	3, 32° (c)	3 + 6.1	C	2	2		35	95		2	no	T4 ³⁾	II B ⁴⁾	+	+	+	1

4. New entries or lines:

4.1 New entries to be added:

1276	N-PROPYL ACETATE	3, 3° (b)	3	N	2	2		10	97	0.88	3	yes	T1	II A	+	+	-	1
3276	NITRILES, TOXIC, N.O.S. (2-methylglutaro- nitrile)	6.1, 12° (b)	6.1	C	2	2		10	95	0.95	2	no	-	-	-	-	+	2

4.2 The following existing entries: 1663; 1664, 2nd line; 1708, 3rd line; 1750; 1987, last line; 2076; 2078; 2215; 2280; 2312; 2321; 2811, both lines should include following new lines

1663	NITRO- PHENOLS	6.1, 12° (c)	6.1	C	2	2	2	25	95		2	no	-	-	-	-	+	0	7;17; 20: +85°C
1664	NITRO- TOLUENES (p-nitrotoluene, molten)	6.1, 12° (b)	6.1	C	2	2	2	25	95	1.16	2	no	-	-	-	-	+	2	7; 17; 20: +88°C
1750	CHLORACETIC ACID SOLUTION	6.1, 27° (b)	6.1 + 8	C	2	2	2	25	95	1.58	2	no	-	-	-	-	+	2	7; 17; 20: +111°C
1987	ALCOHOLS, FLAMMABLE, N.O.S. (cyclohexanol)	3, 31° (c)	3	N	3	2	2		95	0.95	3	yes	-	-	-	-	-	1	7; 17; 20: +53°C
2076	CRESOLS	6.1, 27° (b)	6.1 + 8	C	2	2	2	25	95	1.03- 1.05	2	no	-	-	-	-	+	2	7; 17; 20: +70°C
2078	TOLUENE DIISOCYANATE AND ISOMERIC MIXTURES (2.4 toluene diiso- cyanate)	6.1, 19° (b)	6.1	C	2	2	2	25	95	1.22	2	no	-	-	-	-	+	2	2; 7; 8; 17; 20: +112°C
2215	MALEIC ANHYDRIDE	8, 31° (c)	8	N	3	3	2		95	0.93	3	yes	-	-	-	-	-	0	7; 17; 20: +88°C
2280	HEXA- METHYLENE- DIAMINE, molten	8, 52° (c)	8	N	3	3	2		95	0.83	3	yes	-	-	-	-	-	0	7; 17; 20: +70°C

2312	PHENOL, MOLTEN	6.1, 24° (b)1.	6.1	C	2	2	2	25	95	1.07	2	no	-	-	-	-	+	2	7; 17; 20: +67°C
2321	TRICHLORO- BENZENES, LIQUID (<i>1,2,4- trichlorobenzene</i>)	6.1, 15° (c)	6.1	C	2	2	2	25	95	1.45	2	no	-	-	-	-	+	0	7; 17; 20: +95°C
2811	TOXIC SOLID, ORGANIC, N.O.S. (<i>1,2,3- trichlorobenzene, molten</i>)	6.1, 25°(c)	6.1	C	2	2	2	25	95		2	no	-	-	-	-	+	0	7; 17; 20: +111°C; 22
2811	TOXIC SOLID, ORGANIC, N.O.S. (<i>1,3,5- trichlorobenzene, molten</i>)	6.1, 25°(c)	6.1	C	2	2	2	25	95		2	no	-	-	-	-	+	0	7; 17; 20: +92°C; 22

ANNEX D.1

TRANSITIONAL PROVISIONS

Add the following entries:

Table of transitional provisions

Marginal	Subject	Time limit and comments
210 014	Flame arrester High velocity vent valve Test according to European standard EN 12 874 (1998)	N.R.M. The following requirements are applicable on board vessels in service: Flame arresters and high velocity vent valves shall be of a type approved by the competent authority for the use prescribed
210 282	Certificate of approval for oil-separator vessels	Renewal of the certificate of approval, however, before 1 January 2003
210 419	Inerting of type N vessels	31 December 2010
321 200 331 200	Protection of vapour pipes against corrosion	N.R.M.
311 211(2)(d) 321 211(2)(d)	Side stringers between the hull and the cargo tanks	N.R.M.
321 221(1)(e) 331 221(1)(e)	Instrument for measuring pressure in the cargo tank	Renewal of the certificate of approval after 1 January 2001. Up to 31 December 2010 on board vessels in service which do not carry substances for which remarks 5, 6 or 7 are included in column 20 of the list of substances in Appendix 4, the instrument for measuring pressure in the cargo tank conforms to requirements when the vapour pipe is equipped with such an instrument at its front and rear extremities
331 221(5)(b)	Sensor according to marginal 331 221(1)(d)	Renewal of the certificate of approval after 1 January 1999
331 221(5)(c)	Connecting nozzle according to standard EN 12827	31 December 2002
331 221(5)(c)	Device for rapid shutting off of supply	31 December 2003
311 221(7) 321 221(7) 331 221(7)	Vacuum or overpressure alarms in cargo tanks for the carriage of substances without remark 5 in column 20 of the list of substances (Appendix 4)	N.R.M.

321 221(7) 331 221(7)	Vacuum or overpressure alarms in cargo tanks for the carriage of substances with remark 5 in column 20 of the list of substances (Appendix 4)	N.R.M. Vessels furnished with a certificate of approval valid at 31 December 2000 shall meet these requirements no later than 31 December 2010
311 221(7) 321 221(7) 331 221(7)	Temperature alarms in cargo tanks	N.R.M.
321 222(5)(a) (b) (c) (d)	Flame arrester or Valves or Individual gas discharge pipe or Shut-off devices	N.R.M. Vessels furnished with a certificate of approval valid at 31 December 1998 shall meet these requirements no later than 31 December 2010
331 222(5)(a) (b) (c) (d)	Flame arrester or Valves or Individual gas discharge pipe or Shut-off devices	N.R.M. Vessels furnished with a certificate of approval valid at 31 December 1998 shall meet these requirements no later than 31 December 2010
321 222(5)(a)	Fire-fighting installation	31 December 2010
311 232(2) 321 232(2) 331 232(2)	Openings of air pipes 0.50 m above the deck	N.R.M.

Add the following text at the end of the transitional provisions:

“Remark 5:

On board tank vessels in service, the dismantling of the fixed plate stacks of flame arresters is permitted in the event of the carriage of substances for which remark 5 is included in column 20 of the list of substances (Annex B.2, Appendix 4). This transitional provision is valid until 31 December 2010.

Remarks 6 and 7:

On board tank vessels in service vapour pipes and pressure/vacuum valves do not need to be heated in the event of the carriage of substances for which remarks 6 or 7 are included in column 20 of the list of substances (Annex B.2, Appendix 4). This transitional provision is valid until 30 December 2010.

On board vessels equipped with flame arresters with fixed plate stacks, the latter may be dismantled in the event of the carriage of the above-mentioned substances. This transitional provision is valid until 31 December 2010.”

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